	Application No.	Applicant(s)
Notice of Allowability	09/553,956	RUNKLER ET AL.
	Examiner	Art Unit	
	HUNG Q. PHAM	2168	

*-- The **MAILING DATE** of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *10/03/06*.

2. ☒ The allowed claim(s) is/are *6-8,10,12-17,23-25,27 and 29-36*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *11/25/06* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

Hung Pham
Examiner
AU 2168

EXAMINER'S AMENDMENT

- As in the Examiner Answer to Appeal Brief 06/13/2005:

    Claims 7, 8, 24, 25 were allowed;

    Claims 15 and 32 were objected;

    Claims 1-6, 10, 12-23, 27, 29-31 and 33-36 were appealed.

- As in the BPAI Decision 10/03/06, the Examiner Answer was partially affirmed, wherein:

    Claims 1-5 and 18-22 were affirmed (BPAI, Page 14, The last paragraph);

    Claims 6, 10, 12-17, 23, 27 and 29-31 and 33-36 were reversed.

- An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

    Authorization for this examiner's amendment was given in a telephone interview with applicants' representative, JOSHEPH OLSEN, on 11/08/2006.

    In the Claims filed on 03/30/2005, please:

    CANCEL claims 1-5 and 18-22;

    REPLACE claims 6, 17, 23 and 34 with the clean version (without strike-through and underlining markings), which was amended by the examiner as below:

Claim 6.   A computer-implemented method for refining a node of a decision tree associated with a plurality of data characterized by a plurality of features, comprising:

selecting a feature from among the features characterizing the data associated with the

node;

performing a cluster analysis along the selected feature to group the data into one

or more clusters based on distances between the data and respective one or more centers of

the one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each

of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are

characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster

analysis on the projected data in each of the clusters,

wherein the step of performing the cluster analysis includes the step of performing

a hard cluster analysis.

Claim 17.   A computer-implemented method for generating a decision tree for a plurality

of data characterized by a plurality of features, comprising:

performing a plurality of fuzzy cluster analyses along each of the features to

calculate a maximal partition coefficient and a corresponding set of one or more fuzzy

clusters, said maximal partition coefficient corresponding to one of the features;

selecting the one of the features corresponding to the maximal partition

coefficient; and

building the decision tree based on the corresponding set of one or more fuzzy

clusters and the selected one of the features.

Claim 23.   A computer-readable medium bearing instructions for refining a node of a

decision tree associated with a plurality of data characterized by a plurality of features,

said instructions being arranged to cause one or more processors upon execution thereby

to perform the steps of:

selecting a feature from among the features characterizing the data associated with

the node;

performing a cluster analysis along the selected feature to group the data into one or more clusters based on distances between the data and respective one or more centers of the one or more clusters;

constructing one or more arcs of the decision tree at the node respectively for each of the one or more clusters;

projecting the data in each of the clusters, wherein the projected data are characterized by the plurality of the features but for the selected feature; and

recursively performing the steps of selecting a feature and performing the cluster analysis on the projected data in each of the clusters,

wherein the step of performing the cluster analysis includes the step of performing a hard cluster analysis.

Claim 34   A computer-readable medium bearing instructions for generating a decision tree for a plurality of data characterized by a plurality of features, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

performing a plurality of fuzzy cluster analyses along each of the features to calculate a maximal partition coefficient and a corresponding set of one or more fuzzy clusters, said maximal partition coefficient corresponding to one of the features;

selecting the one of the features corresponding to the maximal partition coefficient; and

building the decision tree based on the corresponding set of one or more fuzzy clusters and the selected one of the features.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

• Regarding claims 6 and 23, the closet available prior arts, Rastogi et al. [USP 6,247,016 B1], Shimoji et al. [Data Clustering with Entropical Scheduling] and Shafer et al. [SPRINT: A Scalable Parallel Classifier for Data Mining] also teach a method and program for

refining a node of a decision tree. However, as in claims 6 and 20, Rastogi, Shimoji and Shafer

fail to teach or suggest the step of *performing a hard cluster analysis* when performing the cluster

analysis.

- Regarding claims 10-16 and 27-33, the closet available prior art, Janikow [Fuzzy

Decision Trees: Issues and Method], also teaches a method and program for generating a

decision. However, as in claims 10 and 27, Janikow fails to teach or suggest *a maximal partition*

coefficient as defined in the Specification at page 15.

- Regarding claims 17 and 34-36, the applicant admitted prior art also teaches a

method and program for generating a decision tree. However, as in claims 17 and 34, the

applicant admitted prior art fails to teach or suggest *a maximal partition coefficient* as defined in the

Specification at page 15.

Therefore, the invention is allowable over the prior arts of record for being directed to a

combination of claimed elements including the providing steps as indicated above.

- Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. PHAM whose telephone number is 571-272-4040. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIM T. VO can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HUNG Q PHAM
Examiner
Art Unit 2168

November 25, 2006